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PATENT  
Docket No. P1665WOUS

**IN THE  
UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANT: ANDREW JAMES GALLANT

SERIAL NO.: 10/518,737

EXAMINER: NGUYEN T. HA

FILED: DECEMBER 16, 2004

ART UNIT: 2831

TITLE: A MICRO-ELECTROMECHANICAL  
VARIABLE CAPACITOR

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COMMISSIONER FOR PATENTS  
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**CORRECTED PRELIMINARY AMENDMENT**

To the Commissioner:

This letter is a Corrected Preliminary Amendment submitted to be in compliance with a Notice of Non-Compliant Amendment dated May 5, 2006, in support of the above-referenced patent application filed on December 16, 2004. The Applicant respectfully requests favorable consideration of the below-submitted Corrected Preliminary Amendment and remarks.

## AMENDMENT

**In the Claims: Kindly amend Claim 3;**

**Cancel Claims 5-30; and**

**Add new Claims 31-49 as follows. A complete listing of the Claims is herein included.**

5 1. (Original) A micro-electromechanical variable capacitor comprising first and second capacitor plates defining facing surfaces which are spaced apart to define a gap, and means for applying a potential difference across the gap, at least one of the plates being movable relative to the other such that when a potential is applied across the gap the width of the gap is varied as a function of the applied potential so as to vary the capacitance of the capacitor, wherein the facing surface of at least one plate has a roughened surface, the degree of roughness being sufficient to prevent the facing surfaces adhering together.

2. (Original) A micro-electromechanical variable capacitor according to claim 1, wherein the means for applying a potential difference is configured to apply the potential difference across the facing surfaces of the plates.

3. (Currently Amended) A micro-electromechanical variable capacitor according to claim 1, wherein the first capacitor plate defines at least one control electrode, the means for applying a potential difference being configured to apply the potential difference across ~~the (or each)~~ or said at least one control electrode and ~~the~~ said second capacitor plate.

4. (Original) A micro-electromechanical variable capacitor according to claim 3, wherein the first capacitor plate defines an active electrode on which said facing surfaces is defined.

5 - 30 (Canceled)

31. (New) A micro-electromechanical variable capacitor according to claim 4, wherein the gap between the active electrode and the second capacitor plate is less than that between each of said at least one control electrode and said second capacitor plate.

32. (New) A micro-electromechanical variable capacitor according to claim 1, wherein the second capacitor plate is movable and the first capacitor plate is fixed.

33. (New) A micro-electromechanical variable capacitor according to claim 32, wherein the second plate is flexible and is movable by virtue of its flexibility.

34. (New) A micro-electromechanical variable capacitor according to claim 33, wherein the second plate comprises a pair of anchor members that are fixed relative to the first plate and an intermediate portion that is flexible and moveable.

35. (New) A micro-electromechanical variable capacitor according to claim 34, wherein the intermediate portion of the second plate is substantially planar.

36. (New) A micro-electromechanical variable capacitor according to claim 35, wherein the facing surface of the first plate has a roughened surface.

37. (New) A micro-electromechanical variable capacitor according to claim 36, wherein the facing surface of the second plate has a roughened surface.

38. (New) A micro-electromechanical variable capacitor according to claim 37, wherein the roughened surface of the facing surface of the second plate is dissimilar to the roughened surface of the facing surface of the first plate.

39. (New) A micro-electromechanical variable capacitor according to claim 38, wherein the dissimilarity is at least in part caused by the action of a sacrificial material used in the fabrication process.

40. (New) A micro-electromechanical variable capacitor according to claim 39, wherein at least the facing surface of the second plate with a roughened surface is fabricated from electroplated nickel or gold

5 41. (New) A method for fabricating a micro-electromechanical variable capacitor having first and second capacitor plates defining facing surfaces which are spaced apart to define a gap, and means for applying a potential difference across the gap, at least one of the plates being movable relative to the other such that when a potential is applied across the gap the width of the gap is varied as a function of the applied potential so as to vary the capacitance of the capacitor, the method comprising the step of fabricating at least one plate with a roughened facing surface, the degree of roughness being sufficient to prevent the facing surfaces adhering together.

42. (New) A method according to claim 41, wherein at least the facing surface of the first plate is fabricated by electroplating.

43. (New) A method according to claim 41 wherein at least the facing surface of the second plate is fabricated by electroplating.

44. (New) A method according to claim any one of claims 41, wherein said first capacitor plate is fabricated to have at least one control electrode, the means for applying a potential difference being configured to apply the potential difference across each of said at least one control electrode and said second capacitor plate.

- 5 45. (New) A method according to claim 41, further comprising the steps of fabricating the first plate with a roughened surface, fabricating an overlying intermediate layer such that the roughness of the facing surface is repeated on an upper surface of the intermediate layer and then fabricating the second plate over the intermediate layer such that its facing surface is formed with an inverse of the upper surface of the intermediate layer, and then removing the intermediate layer.
46. (New) A method according to claim 45, wherein said intermediate layer is removed by etching.
47. (New) A method according to any one of claims 45, wherein the intermediate layer is a sacrificial layer fabricated from titanium.
48. (New) A method according to claim 45, wherein the sacrificial layer introduces further roughness to the facing surface of the second plate.
49. (New ) A method according to claim 48, wherein the first capacitor plate is fabricated to have an active electrode on which said facing surface is defined.